

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 09/682,923  
Applicant : ADEDEJI et al.  
Filed : November 1, 2001  
TC/A.U. : 1711  
Examiner : J. Mullis

Assignee Docket No. : 08CN6028-2  
Attorney Docket No. : GP2-0187  
Customer No. : 23413

Via Facsimile (703) 872-9310, TC Group 1700  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.132

I, Thomas J. Hartle, declare and state:

1. My educational background includes a B.S. in Chemistry from Moravian College (1995), and a Ph.D. in Chemistry from the Pennsylvania State University (2000).
2. I have been employed by the General Electric Company since June, 2000, where I am currently a Product Development Specialist in the NORYL® Technology Department of GE Plastics.
3. I am an inventor or co-inventor on at least three issued U.S. patents and at least eight pending U.S. patent applications relating to thermoplastic compositions, methods, and articles.
4. I am an applicant on the above-identified application.

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5. I designed and supervised the testing of three samples to determine the effect on low-temperature impact strength of the block copolymer components. Compositions and properties are summarized in the Table, below. All samples contained 19.95 weight percent of poly(2,6-dimethyl-1,4-phenylene ether), 34.91 weight percent of homopolystyrene, 34.91 weight percent of polypropylene, 0.05 weight percent of magnesium oxide, 0.05 weight percent of zinc sulfide, 0.15 weight percent of tridodecyl phosphite, and 9.98 weight percent of total block copolymer. In Comparative Example A, the block copolymer consisted of a hydrogenated block copolymer that was a styrene-(ethylene-butylene)-styrene block copolymer having a total polystyrene content of 66 weight percent. In Comparative Example B, the block copolymer consisted of an unhydrogenated block copolymer that was a styrene-butadiene-styrene block copolymer having a styrene content of 28 weight percent. In Example A, the block copolymer consisted of a 50:50 weight/weight blend of the hydrogenated block copolymer and the unhydrogenated block copolymer from the comparative examples. Each composition was compounded and molded into bars for impact strength testing. Unnotched Izod impact strengths, expressed in foot-pounds/inch, were measured at -30°C according to ASTM D256. Although one would have expected the impact strength of the composition with the copolymer blend to be in between those of the composition with the hydrogenated copolymer alone and the composition with the unhydrogenated copolymer alone, it was instead much greater. Specifically, the Example A composition containing 4.99 weight percent each of a hydrogenated styrene-butadiene-styrene triblock copolymer and an unhydrogenated styrene-butadiene-styrene triblock copolymer exhibited an Unnotched Izod impact strength value at -30°C of 11.98 foot-

pounds/inch, which is 85.2% greater than the value of 6.47 foot-pounds/inch exhibited by the Comparative Example A composition with 9.98 weight percent of the hydrogenated block copolymer alone, and 148% greater than the value of 4.84 foot-pounds/inch exhibited by the Comparative Example B composition with 9.98 weight percent of the unhydrogenated block copolymer alone. There is therefore a substantial synergistic effect for the combination of the hydrogenated block copolymer and the unhydrogenated block copolymer.

Table

	C. Ex. A	C. Ex. B	Ex. A
Poly(arylene ether) (wt%)	19.95	19.95	19.95
Homopolystyrene (wt%)	34.91	34.91	34.91
Polypropylene (wt%)	34.91	34.91	34.91
Magnesium oxide (wt%)	0.05	0.05	0.05
Zinc sulfide (wt%)	0.05	0.05	0.05
Tridodecyl phosphite (wt%)	0.15	0.15	0.15
Hydrogenated block copolymer (wt%)	9.98	--	4.99
Unhydrogenated block copolymer (wt%)	--	9.98	4.99
Unnotched Izod at -30°C (ft-lb/in)	6.47	4.84	11.98

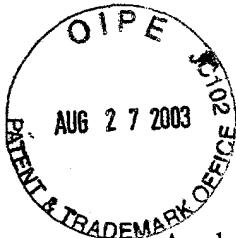
6. I further declare that all statements and representations made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements and representations were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued therefrom.

08/22/03

Dated

Thomas J. Hartle

Thomas J. Hartle, Ph.D.



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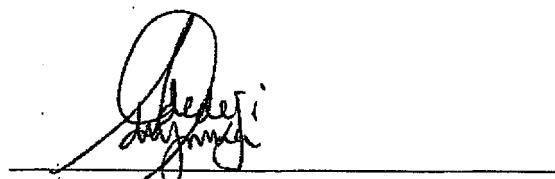
Adeyinka Adedeji, Thomas J. Hartle, and John C. Haylock declare and state that:

1. We are the inventors of the invention claimed in the above-identified patent application.
2. We conceived in the United States the invention disclosed and claimed in the above-identified patent application prior to September 29, 2000 and then diligently reduced the invention to practice in the United States prior to September 29, 2000.
3. As evidence in support of this prior conception and reduction to practice, submitted herewith is the following evidence of activity done in the United States. The

Exhibit is a copy of a request for compounding and testing of sixteen compositions. The composition labeled "2" is embraced by the claims of the above-identified patent application. Its components are "SBS" which is an unhydrogenated styrene-butadiene-styrene triblock copolymer having about 31% polystyrene, obtained as KRATON® D1101 (pellet form) from Shell Chemical Company; "SEBS," which is a hydrogenated styrene-butadiene-styrene triblock copolymer (also known as styrene-(ethylene-butadiene)-styrene triblock copolymer), 66 weight percent polystyrene, obtained as TUFTEC® H1043 (pellet form) from Asahi Chemical; "xPS," which is a homopolystyrene; "PPO (.40 IV)," which is a poly(2,6-dimethyl-1,4-phenylene ether) having an intrinsic viscosity of 0.40 deciliters per gram in chloroform at 25°C and manufactured and sold by General Electric Company; "PP powder," which is an atactic polypropylene obtained as PD403 (pellet form) from Montell Polyolefin Inc.; "EPR (Heco-60)," which is a polypropylene with ethylene-propylene rubber (EPR) as heterophasic/pre-dispersed, EPR content = 60 weight %, obtained as Profax 8623 from Montell Polyolefin Inc.; and "Interloy," which is a polypropylene-polystyrene graft copolymer, obtained as Interloy P1045H1 (pellet form) from Montell Polyolefin Inc. Using the language of our claims, the relevant weight percents in the table, based on the total composition, are 2.9% unhydrogenated block copolymer ("SBS"), 2.9% hydrogenated block copolymer ("SEBS"), 45.6% poly(alkenyl aromatic) resin ("xPS"), 31.0% poly(arylene ether) ("PPO (.40 IV)'), 12.1% polyolefin (corresponding to 9.7 weight percent "PP powder" plus 2.4 weight percent polypropylene in "EPR (Heco-60)'), and 2.0 weight percent polypropylene-polystyrene graft copolymer ("Interloy"). The redacted date near the upper left corner of the Exhibit, corresponding to the date of the request, is prior to September 29, 2000, and the composition was actually compounded prior to September 29, 2000. Therefore, conception and actual reduction to practice of the present invention occurred prior to the September 29, 2000 filing date of the U.S. Patent No. 6,509,412 to Hall.

4. The undersigned declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Date: 8/25/2003



Adeyinka Adedeji

Date: \_\_\_\_\_

Thomas J. Hartle

Date: \_\_\_\_\_

John C. Haylock

**EXHIBIT T**

## ENVIRONMENTAL STATEMENT SHEET

REQUEST NO.

805



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Date: \_\_\_\_\_

Adeyinka Adedeji

Date: 08/22/03

Thomas J. Hartle  
Thomas J. Hartle

Date: \_\_\_\_\_

John C. Haylock



08CN6028-2



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Date: \_\_\_\_\_

Adeyinka Adedeji

Date: \_\_\_\_\_

Thomas J. Hartle

Date: Aug. 25<sup>th</sup>, 2003

John C. Haylock  
John C. Haylock

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(GP2-0187)

**EXHIBIT**

B1 END SET EQUIPMENT SHEET

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